

EDIBLE CHELONIANS AND THEIR PRODUCTS¹

BY

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On account of the food shortage that is at present prevailing in India, Fishery Departments of many Provinces and States are making special efforts to increase production of fish and to market it to the public in a wholesome condition and at cheap rates. The Chelonians² (Tortoises, Turtles etc.) as a valuable source of food do not, however, appear to have received adequate attention. Tortoises and turtles, are not only an excellent food, rich in proteins and other valuable nutritive elements, but a fishery of these animals, if conducted on proper scientific lines, will provide employment for a considerable number of persons and will also help in setting up small scale industries in tortoise-shell, turtle-oil, etc. One great advantage in the fishery of these animals is that they can be kept for a considerable time out of water and do not suffer any appreciable deterioration in their edible qualities.

Turtle farming is a flourishing industry in Mexico, Japan and other countries. In some parts of India, notably in Assam and Bengal, considerable quantities of chelonians are caught and eaten. The Santals and some other tribes in Rajmahal relish tortoise³ and, according to Annandale⁴, the meat of *Kachuga dhongoka* Gray, commonly known as *Dhundi* or *Dhoor*, is relished even by the Brahmins⁵.

Chelonians may be broadly classified into three groups, according to their habitat, i.e., Marine, Freshwater and Land forms. A brief and general account of those species which are valued as food, or have some other commercial or semi-commercial importance is given below.

I. MARINE FORMS

Dermochelys coriacea (Linn.) is the largest of all living marine turtles; specimens weighing half a ton have been recorded. It is a great wanderer, travelling from ocean to ocean, and generally distributed in the tropical seas, and found in abundance on the coasts of Ceylon. It has no value as food, but eggs are highly prized. Babcock⁶ has recorded that the inhabitants of the tropical islands extract oil out of

¹ Published with the permission of the Director, Zoological Survey of India.

² The term Chelonian has been used in a broad sense. It includes marine, freshwater and land forms.

³ Chaudhuri, B. L., *Rec. Ind. Mus.* VII, p. 212-214 (1912).

⁴ Annandale, N., *Journ. Asiat. Soc. Bengal* X, p. 137, Foot-note (1914).

⁵ In the ancient law books of the Brahmins, the meat of tortoises is not forbidden.

⁶ Babcock, H. L., *P.Z.S.* (London) CVII, p. 595 (1937).

the thick carapace of this animal. Deraniyagala¹ states that the oil is used as canoe preservative of considerable value. A specimen was sold at Colombo for Rs. 30.

Eretmochelys imbricata (Linn.), known as Hawksbill Turtle, is distributed in the tropical and subtropical seas. The flesh is dark, coarse and very seldom eaten. The much valued 'tortoise-shell' of commerce is derived from this species. From a single specimen as much as 10 lbs., of tortoise-shell may be obtained. Watt² has stated that sometime the price of a single specimen goes up to £ 4, though it naturally depends on the quality of its shell. The finest shell, according to Watt, is obtained from the Western Archipelago, but is exported from the southern coast of the Indian continent, Ceylon, the West India Islands and Brazil. In India tortoise-shell is largely used in making ornamental articles in Vizagapatam.

According to Babcock (*loc. cit.*, 1937, p. 601), 4980 chelonians were exported from Jamaica during the year 1929-31, valued at £ 10,097. Deraniyagala³ has given the export figures of *Eretmochelys* scutes, based on the returns from the Ceylon Customs department.

Chelonia mydas (Linn.), the well-known Green Turtle is the animal from which the highly prized turtle soup is prepared. It has got a very wide distribution, occurring in tropical and subtropical seas. It is found in abundance near the Andaman Islands, and on the Rangoon coast. Maxwell⁴ stated that there was a regular trade in these chelonians between Calcutta and the Andaman Islands. In the Nicobar Islands, these animals were extensively killed by 'pegging', and consumed by the local inhabitants.

Sometimes this turtle attains a weight of 400 lbs. The eggs are laid near the sea beach by digging holes at a safe distance from the water-mark. The chief egg-laying period is between July and November. Generally 66 to 195 eggs are laid by a single female. Maxwell (*loc. cit.*, 1911, p. 8) has recorded that the annual collection of eggs of the Green Turtle in the Irrawady division of Burma is about 1,600,000 or more. The Burmese are very fond of chelonian eggs, and the entire catch, therefore commands a high market price; sometimes in bigger cities like Rangoon, the eggs used to be sold at a fancy price. According to this author the eggs are very rich in food value and have a taste somewhat like that of marrow.

In Ceylon these animals are netted from November to March, and are kept in a pen specially constructed for the purpose in the sea near the beach, from which they are transported to the market according to the prevailing demand. In each season the catch runs to about 1,000 turtles. Deraniyagala (*loc. cit.*, 1930, p. 66, footnote) observed that turtle flesh is in great demand in the Jaffna (Ceylon) market. An adult turtle will fetch from Rs. 40 to Rs. 70. The Hindus are

¹ Deraniyagala, P.E.P., *Spol. Zeyl.* XVI. p. 52 (1930).

² Watt, G., *Dictionary Economic. Products VI*, part 1, p. 433 (1892).

³ Deraniyagala, P.E.P., *Tetrapod Rept. Ceylon I.* p. 190 (1933).

⁴ Maxwell, F. D., *Report Inland Sea Fisheries (Rangoon)*, p. 4 (1911).

amongst the chief consumers of this meat. The flesh and blood of this species are said to have some medical properties in curing haemorrhoids.

Babcock (*loc. cit.* 1937, p. 601) has given statistics of the number of chelonians exported from Jamaica (mainly received from the Cayman Islands, and some from Costa Rica and Nicaragua). From the year 1929 to 1931. Green Turtles, numbering 6346, and valued at £1262 were exported. Besides these, a good number of these animals were carried away to New York from Port Limon by the United Fruit Company's boats, but no figure is available.

II. FRESHWATER FORMS

Geoemyda trijuga (Schweigger) is a freshwater species. There are four subspecies found within Indian limits. It is an inhabitant of still water, ditches and ponds and is found in abundance in Bombay and Madras Provinces and also in some parts of Mysore. According to Smith¹ it has recently been introduced into Calcutta. *Geoemyda trijuga thermalis* (Lesson) is found in Ceylon and in the southern parts of the Indian peninsula. Both *Geoemyda trijuga* (Schweigger) and *Geoemyda trijuga thermalis* (Lesson) are edible and much hunted for food.

Hardellathurgi (Gray) is another freshwater tortoise. It is found in the Ganges and Brahmaputra river systems. According to Anderson, it frequents slow-flowing and stagnant waters. In the winter months large numbers of this species are brought to the Calcutta market, where they are readily sold. Anderson² has described a very interesting method of catching this species in the Purneah district of Bihar.

Almost all the species of the genus *Kachuga* (Gray) are edible and their flesh is much esteemed as food. *Kachuga* has a wide range of distribution and is found in almost all the river systems of India. Six distinct species are recorded within Indian limits, *viz.*, *Kachuga smithi* (Gray), *Kachuga tectum* (Gray), *Kachuga sylhetensis* (Jerdon), *Kachuga dhongoka* (Gray), *Kachuga kachuga* (Gray) and *Kachuga trivittata* (Dum. & Bibr.). *Kachuga dhongoka* lays a larger number of eggs than any other species of the genus. Eggs numbering between 30 and 35 are generally laid in sand banks. They are elongate in shape, ca. 55 × 33 mm. in size, and have a very delicious taste.

Batagur baska (Gray) is aquatic and herbivorous in its habits. It is found in 'Bengal, Burma to Cochin-China and to the Malay Peninsula; Sumatra'. The flesh is very much liked by the Burmese who catch this species in large numbers by means of basket-traps specially made for that purpose. Eggs laid by a single female in one night vary from 10 to 30 in number. During the course of six weeks' time about 50 to 60 eggs are laid by a single individual. The eggs measure from 70-79 mm. in length, 40-45 mm. in breadth and weigh about three ounces each. The carapace of the species, as stated by

¹ Smith, M. A., Fauna Brit. India (Rept. & Amph.) I, p. 98 (1931).

² Anderson, J. Zool. Res. W. Yunnan, p. 771 (1878).

Maxwell (*loc. cit.*, 1911, p. 15), has some commercial importance, as it is of great value to the salt boilers.

Amongst the Mudturtles (Trionychidae), species of *Lissemys* Smith and *Trionyx* Geoffroy are mostly used by people as food. According to Annandale¹, these animals are caught in large numbers near Khulna (Bengal), and are transported to the Calcutta market for sale. When the demand is low, the animals are stocked in ponds near Calcutta with their legs fastened together, thereby arresting their movements. Under such conditions they live for months, till such time as they are finally disposed off. From Goaland² and Sunderban areas large quantities of these turtles are brought down to Calcutta and the neighbouring towns, packed in wooden crates and reed or wicker baskets. In Calcutta market the pre-war price of the flesh of these turtles was from six annas to ten annas a seer. Annandale (*loc. cit.*, 1912, p. 157) found that most of the turtles sold in Calcutta market were *Trionyx hurum* Gray and not *Trionyx gangeticus* Cuvier. In South India *Lissemys punctata granosa* and in Burma *Lissemys punctata scutata* are found in abundance and are consumed by the inhabitants of those places.

III. LAND FORMS

Testudo elegans Schoepff, known as 'Starred tortoise', is distributed throughout central and southern India, extending as far south as Ceylon. It is the common tortoise found in Madras Province. The flesh is eaten by the lower classes of people. In Burma it is replaced by *Testudo platynota* Blyth, the flesh of which is greatly esteemed by the Burmese. Blyth³ stated that in Burma the carapace of this species was used for bailing oil out of earthen vessels. *Testudo emys* Schlegel, is another species found in Assam, Burma and Siam. In India it is the largest of the land tortoises and is chiefly hunted for its flesh.

¹ Annandale, N.: *Rec. Ind. Mus.* VII, p. 156 (1912).

² Mr. M. N. Dutt of the Zoological Survey of India while on tour in East Bengal in 1937, saw a large number of chelonians packed in wooden crates and in wicker baskets awaiting despatch to Calcutta at almost all the steamer stations of the I.G.S.N. Company.

Dr. S. L. Hora informs me that on the Khulna Section of the Eastern Bengal Railway he has seen large number of chelonians kept on the platforms of stations upside down and with their legs fastened together for despatch to Calcutta.

³ Blyth, J.: *Journ. Asiat. Soc. Bengal*, XXXII, p. 83 (1863).